

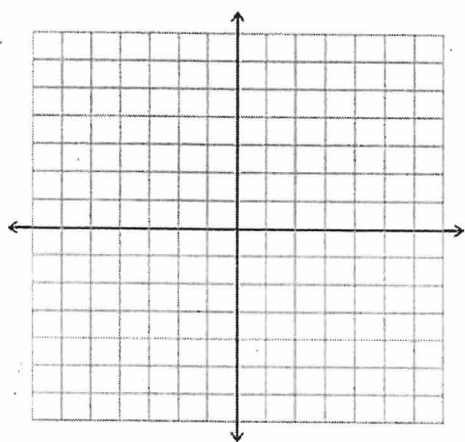
## Chapter 9 Day 8

### Exploring the Discriminant

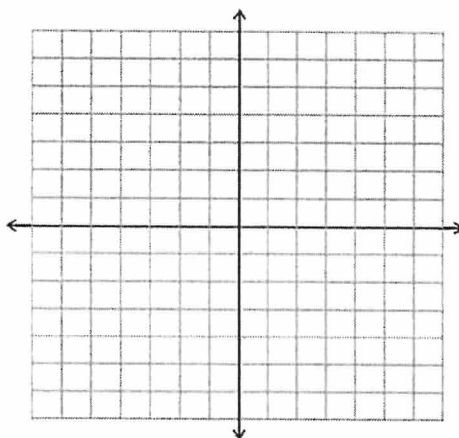
Name: \_\_\_\_\_

Date: \_\_\_\_\_ Per: \_\_\_\_\_

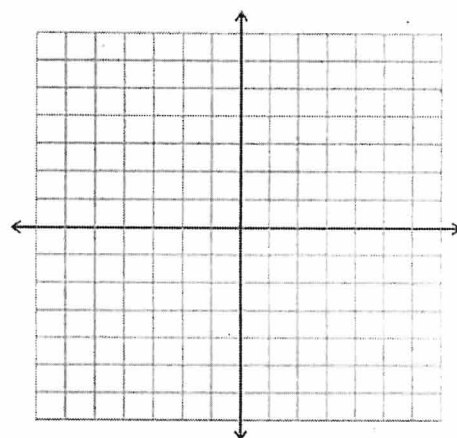
Sketch the three possibilities for zeros/solutions/roots/x-intercepts for quadratics/parabolas.



\_\_\_\_\_ solutions



\_\_\_\_\_ solutions



\_\_\_\_\_ solutions

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### Calculator Basics:

We will be using the TI- Nspire CX calculators to graph these functions instead of graphing them by hand. Yay for technology! Here is a list of steps for how to graph the functions.

1. Turn calculator on (lolz). It's the little house button on the right.
2. Click on "Graph" from the home screen.
3. Press the "tab" button. Make sure the cursor is blinking in the equation line.
4. Using the number and letter keys, enter in the equation (the function). Be sure to use " $x^2$ " button on the left instead of typing it as " $x2$ ."
5. Press the "enter" button, and watch in amazement as your function is drawn!
6. Repeat steps 3-5 to graph any new functions.

**Quadratic Formula:**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

**Discriminant** =  $b^2 - 4ac$

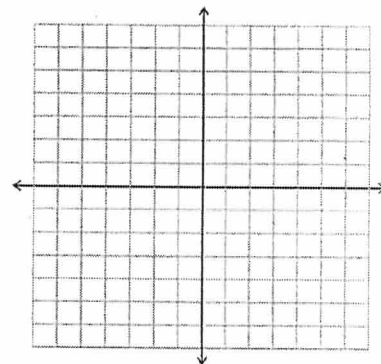
$y = x^2 - 6x + 7$

Find the discriminant:

Sketch the graph:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



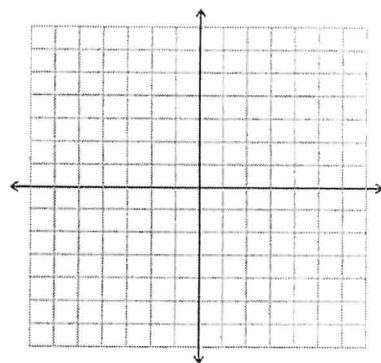
$y = -x^2 + x + 1$

Find the discriminant:

Sketch the graph:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



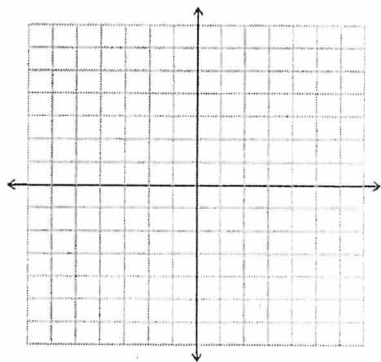
$y = 24x^2 - 14x - 6$

Find the discriminant:

Sketch the graph:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



All of the discriminants on this page are \_\_\_\_\_ (positive, negative, or 0?)

These functions cross the x-axis \_\_\_\_\_ (once, twice, or never?)

**Quadratic Formula:**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

**Discriminant** =  $b^2 - 4ac$

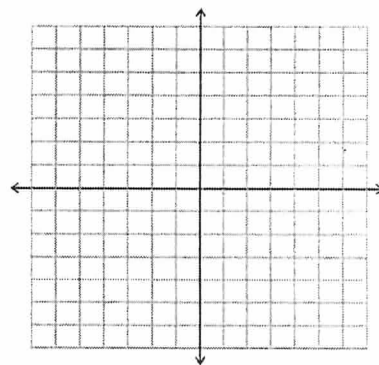
$y = x^2 - 6x + 9$

Sketch the graph:

Find the discriminant:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



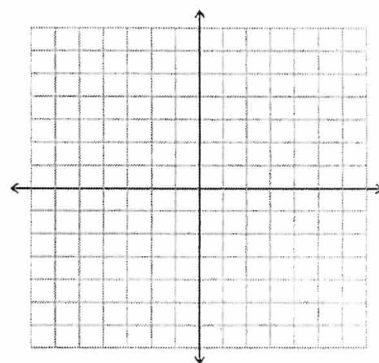
$y = -x^2$

Sketch the graph:

Find the discriminant:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



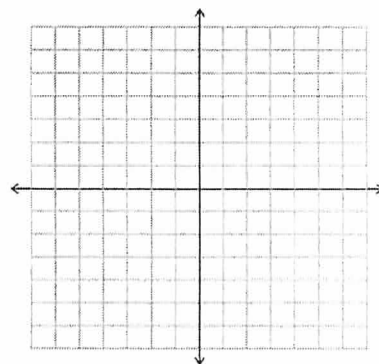
$y = 2x^2 - 2x + 0.5$

Sketch the graph:

Find the discriminant:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



All of the discriminants on this page are \_\_\_\_\_ (positive, negative, or 0?)

These functions cross the x-axis \_\_\_\_\_ (once, twice, or never?)

**Quadratic Formula:**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

**Discriminant** =  $b^2 - 4ac$

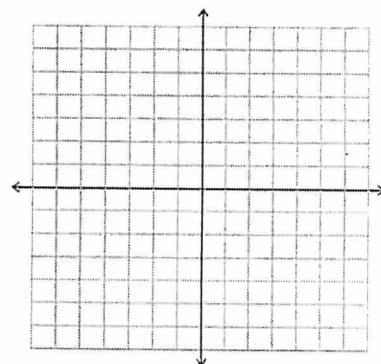
$y = x^2 - 6x + 11$

Find the discriminant:

Sketch the graph:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



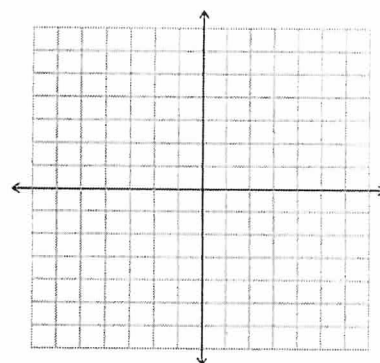
$y = 2x^2 - 3x + 5$

Find the discriminant:

Sketch the graph:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



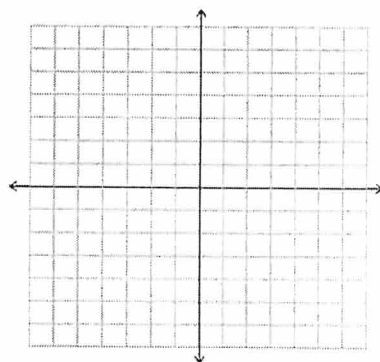
$y = -x^2 + x - 1$

Find the discriminant:

Sketch the graph:

Number of solutions/  
How many times does the  
function cross the x-axis?

\_\_\_\_\_ times



All of the discriminants on this page are \_\_\_\_\_ (positive, negative, or 0?)

These functions cross the x-axis \_\_\_\_\_ (once, twice, or never?)